

IN THE CLAIMS

Please replace all prior versions, and listings, of claims in the application with the following complete list of claims. Insertions are indicated by underlining and deletions are indicated by strikeouts and/or double bracketing.

1-156. (Cancelled).

157. (Previously Presented) A system as in claim 174, further comprising means for controlling the temperature of the chamber to maintain a temperature suitable for cultivating cells to generate the protein resulting from interaction of the cells with oxygen and/or nutrients and/or other components.

158. (Previously Presented) A system as in claim 174, the chamber having a volume of less than about 100 microliters.

159. (Previously Presented) A system as in claim 158, the chamber having a volume of less than about 10 microliters.

160. (Previously Presented) A system as in claim 159, the chamber having a volume of less than about 1 microliter.

161. (Previously Presented) A system as in claim 174, further comprising a mixing unit fluidly connectable to the inlet of the chamber, the mixing unit including an outlet connectable to the inlet of the reaction chamber, a plurality of inlets each in fluid communication with the outlet and a mixing chamber between plurality of inlets and of the outlet.

162. (Previously Presented) A system as in claim 161, wherein the mixing unit chamber is free of active mixing elements.

163. (Previously Presented) A system as in claim 174, further comprising a heating unit having an inlet, and an outlet connectable to the inlet of the chamber, the heating unit separable from and attachable to the chamber.

164. (Previously Presented) A system as in claim 174, the reactor further comprising sensors each of temperature, pH, and oxygen concentration.

165. (Previously Presented) A system as in claim 174, the reactor further comprising a temperature sensor.

166. (Previously Presented) A system as in claim 174, the reactor further comprising a pH sensor.

167. (Previously Presented) A system as in claim 174, the reactor further comprising an oxygen sensor.

168. (Previously Presented) A system as in claim 174, wherein the plurality of reaction units are attachable to and separable from each other, constructed and arranged to operate in parallel.

169. (Currently Amended) A ~~reactor~~ system as in claim 174, comprising at least 10 reaction units constructed to operate in parallel.

170. (Currently Amended) A ~~reactor~~ system as in claim 169, comprising at least 100 reaction chambers constructed to operate in parallel.

171. (Currently Amended) A ~~reactor~~ system as in claim 170, comprising at least 500 reaction chambers constructed to operate in parallel.

172. (Currently Amended) A ~~reactor~~ system as in claim 171, comprising at least 1,000 reaction chambers constructed to operate in parallel.

173. (Currently Amended) A ~~reactor~~ system as in claim 172, comprising at least 10,000 reaction chambers constructed to operate in parallel.

174. (Previously Presented) A system for maintaining and cultivating cells in culture and obtaining a protein resulting from interaction of the cells with oxygen and/or nutrients and/or other components, comprising:

a small-scale chemical or biochemical reactor comprising a plastic substrate comprising a plurality of reaction units constructed to operate in parallel, each reaction unit comprising an inlet, an outlet, and a fluid pathway connecting the inlet and the outlet, the fluid pathway comprising a chamber having a surface suitable for cell growth and a volume of less than about 1 ml, the chamber being constructed and arranged to maintain and cultivate cells in culture, the chamber further comprising an inlet fluidly connectable to a source of nutrients for the cells having a controlled pH, and an outlet for release of the protein resulting from the interaction involving the cells in the chamber;

a membrane defining at least one wall of the fluid pathway; and

an enclosure positioned proximate the membrane, wherein at least one product of the interaction involving cells in the chamber passes across the membrane into the enclosure.

175. (Cancelled)